

Amendments to the Claims

Please amend Claims 1, 8, 11, 16, 21, and 24; and cancel claims 4, 5, 9, 10, 14, 15, 19, 20, 22 and 23. The following listing of claims replaces all prior versions and listings of claims in the present invention.

1. (Currently Amended) A method for determining camera pose from a plurality of point correspondences between at least two images, comprising:

selecting a plurality of five point correspondences from the plurality of point correspondences;

generating at least one hypothesis from each of said five point correspondences
based on a tenth degree polynomial generated by

extracting a nullspace of a 5x9 matrix;

expanding in accordance with cubic constraints;

applying Gauss-Jordan elimination; and

expanding determinant polynomials of two 4x4 polynomial matrices to
obtain said tenth degree polynomial directly;

scoring said plurality of hypotheses for determining a best hypothesis; and

generating rotation and translation information of said camera pose from said best hypothesis.

2. (Original) The method of claim 1, wherein intrinsic parameters associated with said plurality of point correspondences are considered calibrated.

3. (Original) The method of claim 2, wherein said intrinsic parameters include focal length.

4. (Cancelled)

5. (Cancelled)

6. (Original) The method of claim 1, wherein said rotation and translation information are derived from an essential matrix, E.

7. (Original) The method of claim 6, wherein said essential matrix E is a 3x3 matrix that satisfies:

$$EE^T E - \frac{1}{2} \text{trace}(EE^T)E = 0.$$

8. (Currently Amended) The method of claim 1, wherein said scoring step ~~employs preemptive scoring~~ comprises:

scoring said plurality of hypotheses against a first subset of a plurality of observations;

retaining a subset of said scored hypotheses;

scoring said retained subset of said scored hypotheses against a second subset of the plurality of observations;

retaining a subset of said second scored hypotheses; and

repeating said scoring and retaining steps for the plurality of observations.

9. (Cancelled)

10. (Cancelled)

11. (Currently Amended) An apparatus for determining camera pose from a plurality of point correspondences between at least two images, comprising:

means for selecting a plurality of five point correspondences from the plurality of point correspondences;

means for generating at least one hypothesis from each of said five point correspondences based on a tenth degree polynomial generated by

extracting a nullspace of a 5x9 matrix;

expanding in accordance with cubic constraints;

applying Gauss-Jordan elimination; and

expanding determinant polynomials of two 4x4 polynomial matrices to

obtain said tenth degree polynomial directly;

means for scoring said plurality of hypotheses for determining a best hypothesis;

and

means for generating rotation and translation information of said camera pose from said best hypothesis.

12. (Original) The apparatus of claim 9, wherein intrinsic parameters associated with said plurality of point correspondences are considered calibrated.

13. (Original) The apparatus of claim 12, wherein said intrinsic parameters include focal length.

14. (Cancelled)

15. (Cancelled)

16. (Currently Amended) A computer-readable medium having stored thereon a plurality of instructions, the plurality of instructions including instructions which, when executed by a processor, cause the processor to perform the steps of a method for determining camera pose from a plurality of point correspondences between at least two images, comprising of:

selecting a plurality of five point correspondences from the plurality of point

correspondences;

generating at least one hypothesis from each of said five point correspondences
based on a tenth degree polynomial generated by

extracting a nullspace of a 5x9 matrix;

expanding in accordance with cubic constraints;

applying Gauss-Jordan elimination; and

expanding determinant polynomials of two 4x4 polynomial matrices to

obtain said tenth degree polynomial directly;

scoring said plurality of hypotheses for determining a best hypothesis; and

generating rotation and translation information of said camera pose from said best hypothesis.

17. (Original) The computer-readable medium of claim 16, wherein intrinsic parameters associated with said plurality of point correspondences are considered calibrated.

18. (Original) The computer-readable medium of claim 17, wherein said intrinsic parameters include focal length.

19. (Cancelled)

20. (Cancelled)

21. (Currently Amended) The computer-readable medium of claim 16, wherein said scoring step ~~employs preemptive scoring~~ comprises:

scoring said plurality of hypotheses against a first subset of a plurality of observations;

retaining a portion of said scored hypotheses;

scoring said retained portion of said scored hypotheses against a second subset of the plurality of observations;

retaining a portion of said second scored hypotheses; and

repeating said scoring and retaining steps for the plurality of observations.

22. (Cancelled)

23. (Cancelled)

24. (Currently Amended) A method for scoring a plurality of hypotheses for determining a best hypothesis, where rotation and translation information of a camera pose can be derived from said best hypothesis, comprising:

scoring the plurality of hypotheses against a first subset of a plurality of observations;

retaining a ~~subset~~ portion of said scored hypotheses;

scoring said retained subset of said scored hypotheses against a ~~larger~~ second subset of the plurality of observations;

retaining a ~~subset~~ portion of said second scored hypotheses; and

repeating said scoring and retaining steps for ~~[[a]]~~ the plurality of observations.